



RESEARCH DEPARTMENT

**Transmitting aerial for the
Canterbury v.h.f. television station**

TECHNOLOGICAL REPORT No. E-109

1964/59

**THE BRITISH BROADCASTING CORPORATION
ENGINEERING DIVISION**

RESEARCH DEPARTMENT

**TRANSMITTING AERIAL FOR THE CANTERBURY
V.H.F. TELEVISION STATION**

Technological Report No. E-109

(1964/59)

D Maurice

R.D.C. Thoday, Grad. I.E.R.E.

(R.D.A. Maurice)

This Report is the property of the
British Broadcasting Corporation and
may not be reproduced in any form
without the written permission of the
Corporation.

August, 1964

Technological Report No. E-109

(1964/59)

TRANSMITTING AERIAL FOR THE CANTERBURY V.H.F. TELEVISION STATION

INTRODUCTION

The Canterbury relay station came into operation on 29th June 1964. It provides a television service to Canterbury only.

SUMMARY OF INSTALLATION

Site: The site is at Moat House farm about 1.8 miles (2.9 km) north-west of Canterbury city centre, grid reference TR/125596, height 230 ft (70 m) a.m.s.l.

Support Structure: The support structure consists of a 120 ft (37 m) square-section self-supporting tower oriented with one side on a bearing of 155° ETN.

General Arrangement: See Fig. 1.

Channel: Channel 5, with vertical polarization, is used. The vision carrier is offset -6.75 kc/s and the sound carrier +31 kc/s.

Aerial: The aerial¹ consists of two tiers each of one vertical 3-element Yagi oriented to give maximum radiation on a bearing of 135° ETN. The reflector element of each Yagi is spaced 4 ft (1.22 m) from the tower axis. The inter-tier spacing is 1.0λ and the mean height 100 ft (30 m) a.g.l. There are independent main feeders to each tier.

Power: A 10 W translator under-run at 8 W is used.

Templet and
Horizontal Radiation
Pattern (h.r.p.): See Fig. 2 and Note.

| | | |
|-------|---|---------------------------|
| Gain: | Mean intrinsic gain | 3.4 dB |
| | Deduct: losses due to possible misalignment and distribution feeders | <u>0.2 dB</u> |
| | Mean net gain | 3.2 dB |
| | Deduct: loss in main feeder (type PT93) | 2.1 dB |
| | network loss | <u>0.6 dB 2.7 dB</u> |
| | Mean effective gain | <u>0.5 dB</u> |

Programme Link:

The programme is obtained by direct reception of the Channel 2 (vertical polarization) transmission from Dover. The receiving aerial consists of a double 3-element Yagi mounted at a height of 72 ft (22 m) a.g.l. and oriented on a bearing of 155° ETN. Protection against precipitation-static interference is given by the use of a shrouded receiving aerial in conjunction with the corona-protection spike and parasitic reflectors which surmount the tower.

Note: 1.

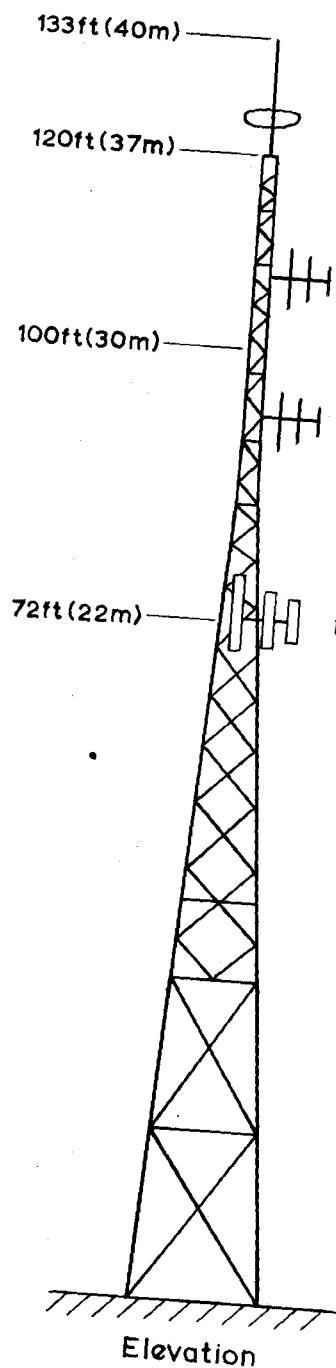
The aerial design was based on the use of a Yagi aerial of the type used for re-broadcast reception and for which the h.r.p. is known from previous measurements.

REFERENCE

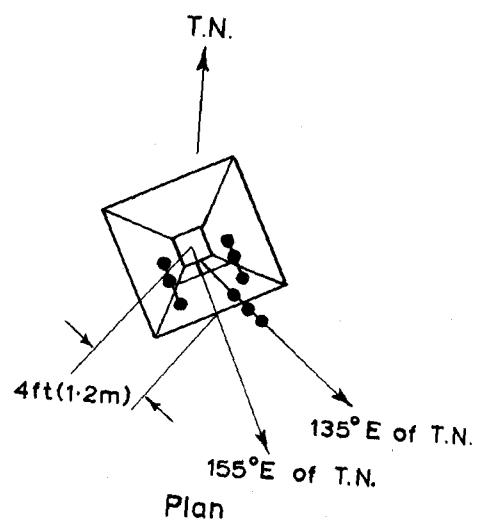
Detailed information on the construction and dimensions of the aerials is given on the following drawings held by BBC Planning and Installation Department:

P.I.D. 9028.2.1A General arrangement of aerials on 120 ft tower

P.I.D. 2572.2.2X R.B.R. aerials



133ft (40m)
120ft (37m)
100ft (30m)
72ft (22m)
Corona - protection spike
and parasitic reflectors
Transmitting aerial (Channel 5)
Receiving aerial
(Channel 2)



Plan

Fig. 1 General arrangement of aerials on tower

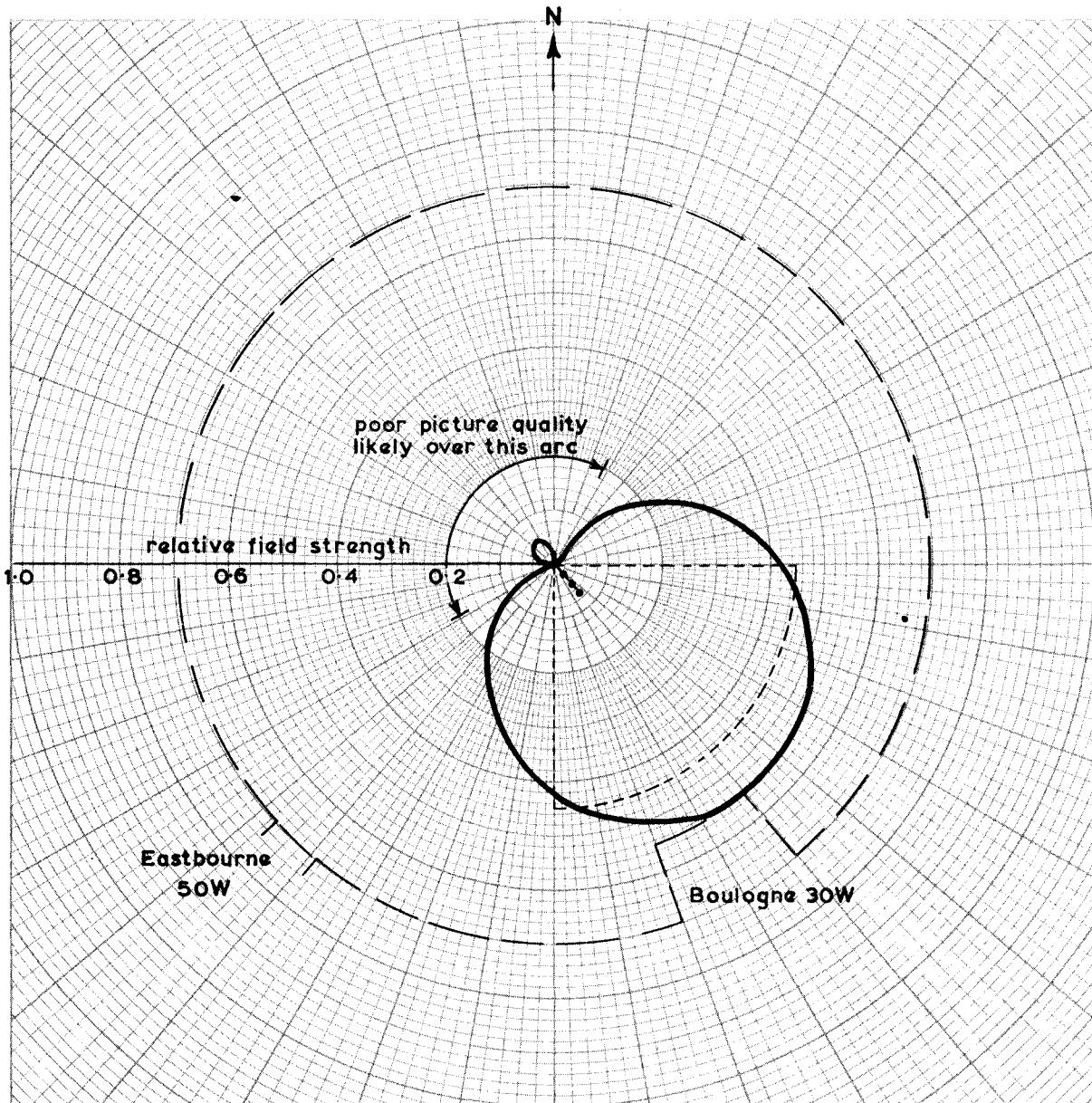


Fig. 2 Templet and horizontal radiation pattern

VERTICAL POLARIZATION

Channel 5 (Vision carrier 66.75Mc/s, Sound carrier 63.25Mc/s)

Mean effective gain 0.5dB ——— Maximum permissible E.R.P.

Transmitter power 8W

----- Minimum desirable E.R.P.

Mean E.R.P. 9W

Unit field corresponds to an E.R.P. of 100W